

Date: Tuesday, 6/19/2007 2:03:40 PM  
User: Kim Johnston

## Process Sheet

Customer: : CU-DAR001 Dart Helicopters Services Drawing Name : FWD X-TUBE EXTENDED HEIGHT GEAR (-011)  
Job Number : 32941  
Estimate Number : 10007  
P.O. Number : N/A Part Number : D205596101  
This Issue : 6/19/2007 S.O. No. : N/A Drawing Number : D205-596-101 REV A  
Prsht Rev. : NC Project Number : N/A  
First Issue : N/A Type : LANDING GEAR Drawing Revision : ~~EA~~ ~~BA~~ A 08.01.02  
Previous Run : 32940 Material : N/A  
Written By : Due Date : 7/15/2007 Qty: 1 Um: Each  
Checked & Approved By : Kim Johnston  
Comment : Est Rev 8 Removed Bending 05-10-25 JLM

## Additional Product

Job Number:



Seq. #: Machine Or Operation: Description :

1.0 DC DOCUMENT CONTROL



Comment: DOCUMENT CONTROL

Photocopy D205-594 bluefile &amp; type labels per PPP D205-596-101 CHG001#2

2.0 D2889 FWD Crosstube



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

FWD Crosstube

Pick:

Qty Part number Description Batch

1 D2889 Fwd Crosstube B33023

3.0 BENDING BENDING MACHINE



Comment: BENDING MACHINE

Bend as per Dwg D2889

EL 7-6-05

4.0 LANDING GEAR 1 LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

Mark 31.53" for cutting from tangential line in the straight section from D2889 as per Dwg wall template.

\*\*\*Identify off-cuts with batch number &amp; part number and bring them to cnc lathe\*\*\*

EL 7-10-12

5.0 QC15 DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

7-24-09 ①

# Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
08.01.02	11 to 13	INSTALL D2893-1 Supports WITH MAGNABOND PER DSI 9396 Rev. A	6	08/01/02	(+6)	08.01.02 per DSI/642	

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 6/19/2007 2:03:40 PM

User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: FWD X-TUBE EXTENDED HEIGHT GEAR (-011)

Job Number: 32941

Part Number: D205596101

Job Number:



Seq. #:

Machine Or Operation:

Description:

6.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Cut as per Dwg D205-596-101

2-Deburr &amp; Inspect for surface damage. Polish cut surface. Scribe part # and end of tube.

Batch # on one

AWM 07-11-05  
JK 7-10-15

7.0

QC15

DIMENSIONAL CHECK OF X-TUBES



Comment: DIMENSIONAL CHECK OF X-TUBES

07-12-02

8.0

HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat per QSI 005 4.1

AWM 07-11-05 JK 7-10-17

9.0

SPRAY PAINTING

SPRAY PAINTING



Comment: SPRAY PAINTING

Prime inside and outside with Immron per QSI 005 4.2

07-12-18

07

10.0

QC14

INSPECT SPRAY PAINT



Comment: Inspect Spray Paint

07-12-19 01

11.0

D2856600851

Abrasion Strip



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Abrasion Strip

Pick:

Qty Part number

Description

Batch

2 D2856-600-851 Abrasion Strip

rubber strip 03595-063-450

B 35124

07-12-30

12.0

D28931

Support



Comment: Qty.: 2.0000 Each(s)/Unit Total: 2.0000 Each(s)

Support

Pick:

Qty Part number Description Batch

2 D2893-1 Support

35579

07-12-30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Tuesday, 6/19/2007 2:03:40 PM  
User: Kim Johnston

## Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: FWD X-TUBE EXTENDED HEIGHT GEAR (-011)

Job Number: 32941

Part Number: D205596101

Job Number:



Seq. #:

Machine Or Operation:

Description :

13.0

MS2192024

Clamp(per MIL-DTL-8783C)



Comment: Qty.: 4.0000 Each(s)/Unit Total : 4.0000 Each(s)

Pick:

Qty Part number

Description Batch

4 MS21920-24 Clamp 104550

25 07-12-30

14.0

LANDING GEAR 1

LANDING GEAR RESOURCE 1



Comment: LANDING GEAR RESOURCE 1

1-Install Abrasion strips per QSI 035 position using DT8582. Install supports and clamps per Dwg

D205-596-101. Torque clamps to 80-100 in lb. Seal edges of support using Sikaflex

per DSE 9396 see attached

per ECN 1075

25 07-12-30

15.0

QC5

INSPECT WORK TO CURRENT STEP



Comment: INSPECT WORK TO CURRENT STEP

12-31 @

16.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and pack for shipping as per PPP D205-596-101

Location: F

8/1/02 50 (1A)

17.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

25 08/01/03

Job Completion



25 #4 08/01/02

2008/1/2

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

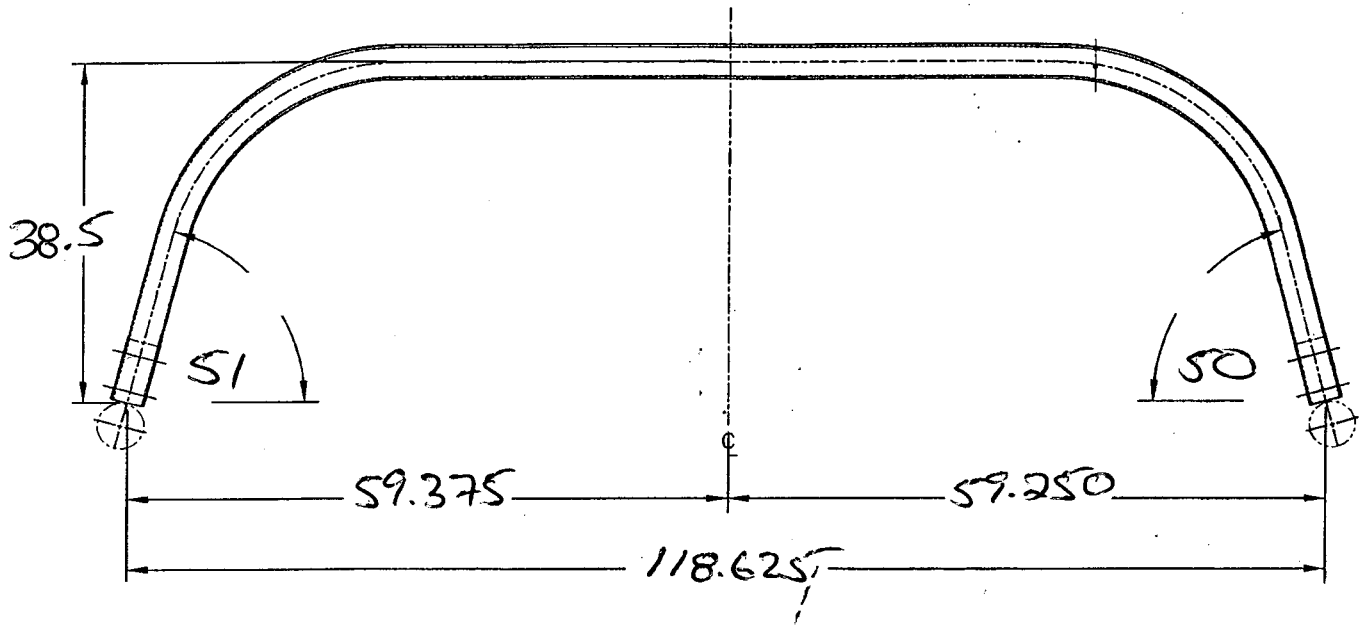
QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD		Work Order:	32941
Description: Crosstube High-High Fwd		Part Number:	D205-596-101
Inspection Dwg: D205-596-101 Rev: A		Page 1 of 1	

Required Dimension	Min	Max
Height	38.2	38.4
1/2 Span	59.5	59.7
Angle	49	52
Total Span	119.0	119.4



Comments
See Attached E-mail from David

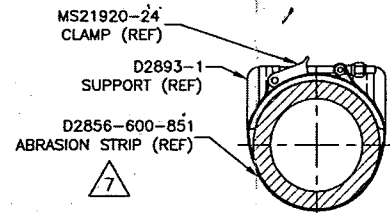
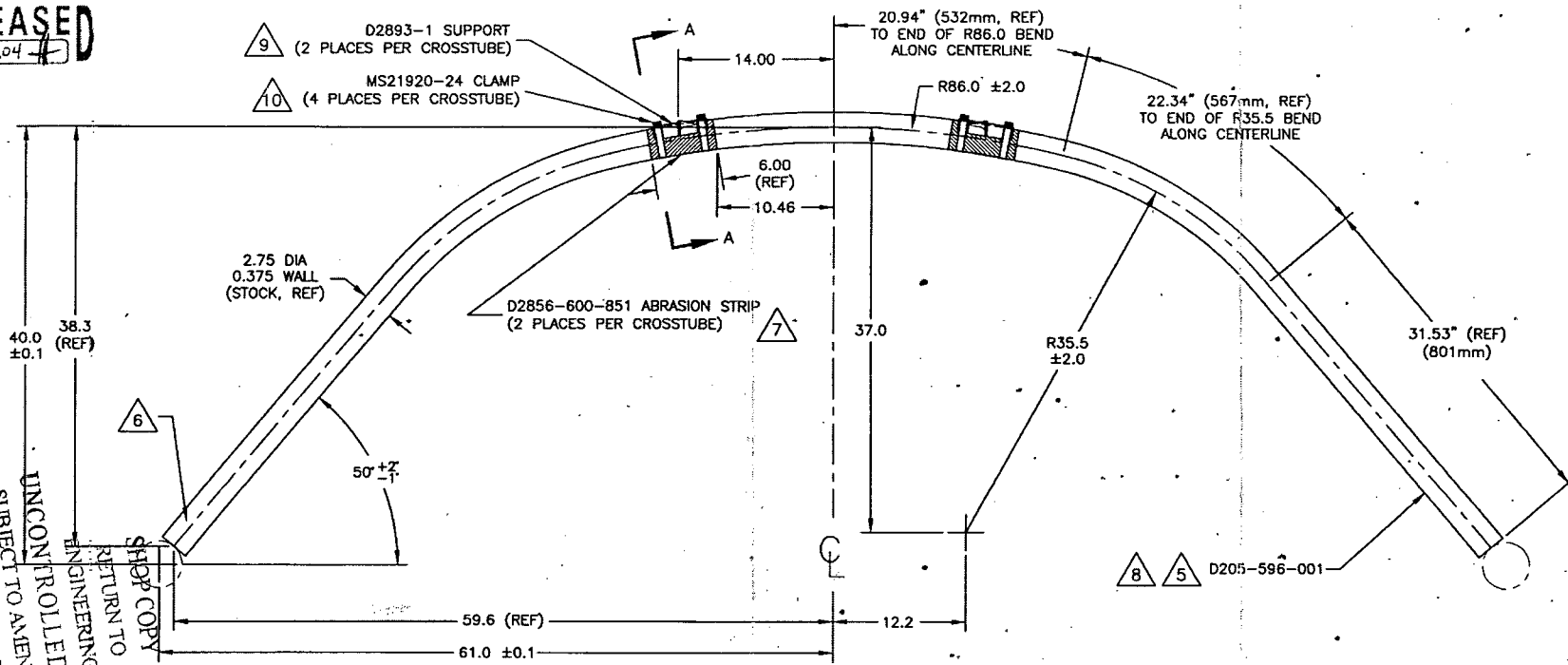
QC15 Inspection Date	20707.9
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Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	<i>[Signature]</i>





RELEASED  
02.06.04



GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) MATERIAL: MANUFACTURE FROM D6005-180  
FINISHED LENGTH = 149.60
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE
- 5) BEND PROGRESSIVELY WITH A MINIMUM OF 3 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 6) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS
- 7) INSTALL D2856-600-851 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, CENTERED OPPOSITE D2893-1 SUPPORT, PER QSI 035
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) SEAL EDGES OF SUPPORTS USING SIKAFLEX-241/-291 SEALANT (OPTIONAL)
- 10) TORQUE CLAMPS 80 TO 100 IN-LB

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A	02.05.27	NEW ISSUE
DESIGN	DRAWN BY	DART DART AEROSPACE LTD. HAMPSHIRE, OXFORD, CANADA
CHECKED	APPROVED	DRAWING NO. D205-596-101
DATE	02.05.27	TITLE XTUBE ASS'Y (HI-HI FWD)
		SCALE 1:10

UNCONTROLLED COPY  
 SUBJECT TO AMENDMENT  
 WITHOUT NOTICE  
 WORK ORDER  
 NO. 32941

**L Lacelle**

---

**From:** David Shepherd [dshepherd@dartaero.com]  
**Sent:** July 6, 2007 11:44 AM  
**To:** 'Jason Murdoch'  
**Cc:** 'L Lacelle'  
**Subject:** FW: drawings  
**Attachments:** Drawings.jpg

D205-596-101 B32941 is an acceptable deviation.

David

---

**From:** Jason Murdoch [mailto:jmurdoch@dartaero.com]  
**Sent:** Wednesday, July 04, 2007 12:48 PM  
**To:** 'David Shepherd'  
**Cc:** 'L Lacelle'  
**Subject:** FW: drawings

Hey. Here are some dims for a D205-596-101 B 32941. the tube was over bent on one side, so I had the guys over bend the other side to make them some what symmetrical. We had to up the height to 38.5 to achieve these dims. Is this acceptable? I think it will be okay.

jmurdoch@dartaero.com

Q.C. COORDINATOR

No virus found in this incoming message.

Checked by AVG Free Edition.

Version: 7.5.476 / Virus Database: 269.9.14/880 - Release Date: 6/29/2007 2:15 PM

No virus found in this outgoing message.

Checked by AVG Free Edition.

Version: 7.5.476 / Virus Database: 269.9.14/880 - Release Date: 6/29/2007 2:15 PM

06/07/2007

# DART SERVICE INSTRUCTION

TO AMEND INSTALLATION INSTRUCTIONS IIN-D205-594 Rev. C (AND EARLIER) AND  
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS ICA-D205-594 Rev. 2 (AND EARLIER)  
REF. CANADIAN STC: SH03-6  
REF. FAA STC: SR01742NY

For D205-596-101/-103 Crosstubes (ref. 39" Landing Gear) or D205-596-105/-107 Crosstubes (ref. 31" Landing Gear) at CHG 002 or later, the D2856-600-851/-1009 Abrasion Strips have been removed, the D2893-1 and D2940-1 Supports have been bonded onto the crosstubes using Magnobond 6398 and D3595-063-450/-530 Rubber Cushions have been installed underneath the MS21920-26/-30 Clamps. Amend Parts List of IIN-D205-594 Section 5 and ICA-D205-594 Section 32.8 as follows:

## Remove:

QTY -101	QTY -103	QTY -105	QTY -107	Part Number	Description
2		2		D2856-600-851	ABRASION STRIP
4		4		MS21920-24	CLAMP
	2		2	D2856-600-1009	ABRASION STRIP
	4		4	MS21920-28	CLAMP






## Add:

QTY -101	QTY -103	QTY -105	QTY -107	Part Number	Description
4		4		D3595-063-450	RUBBER CUSHION
4		4		MS21920-26	CLAMP
	4		4	D3595-063-530	RUBBER CUSHION
	4		4	MS21920-30	CLAMP

To prevent the supports from shifting on D205-596-101/-103/-105/-107 Crosstubes at CHG 001, the D2893-1 or D2940-1 Supports should be removed and re-installed as follows:

- 1) Follow section 32.1 of ICA-D205-594 for the removal of the crosstubes from the helicopter.
- 2) Remove the MS21920-24/-28 Clamps that fasten the D2893-1 and D2940-1 Supports from the crosstubes per Section 32.3 of ICA-D205-594.
- 3) Remove the D2856-600-851/-1009 Abrasion Strips from the crosstube per section 32.5 of ICA-D205-594.
- 4) Inspect the crosstube surface underneath the supports for corrosion and mechanical damage per items 5.3.1 and 5.3.2 of the 300 hour inspection. Repair damage within acceptable limits and touch up finish per item 5.3.3 of the 300 hour inspection.
- 5) Inspect the supports for corrosion and mechanical damage per items 5.3.4 of the 300 hour inspection. Repair damage within acceptable limits and touch up finish per item 5.3.4 of the 300 hour inspection.
- 6) Abrade area to which support will be applied with 400 grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe area until there is no residue.
- 7) Apply a 0.03" to 0.06" thick layer of Magnobond 6398 underneath D2893-1 or D2940-1 Supports and re-install the Supports on the crosstube as shown in Figure 1. Install a D3595-063-450/-530 Rubber Cushion on each MS21920-26/-30 Clamp. Position and secure the D2893-1 or D2940-1 Supports on the crosstube using MS21920-26/-30 Clamps. Torque clamps to 80-100 in-lb. Let the D205-596-101/-103/-105/-107 Crosstube Assembly cure before re-installing the crosstube on the aircraft.
- 8) Re-install the D205-596-101/-103/-105/-107 crosstube per section 32.2 of ICA-D205-594.

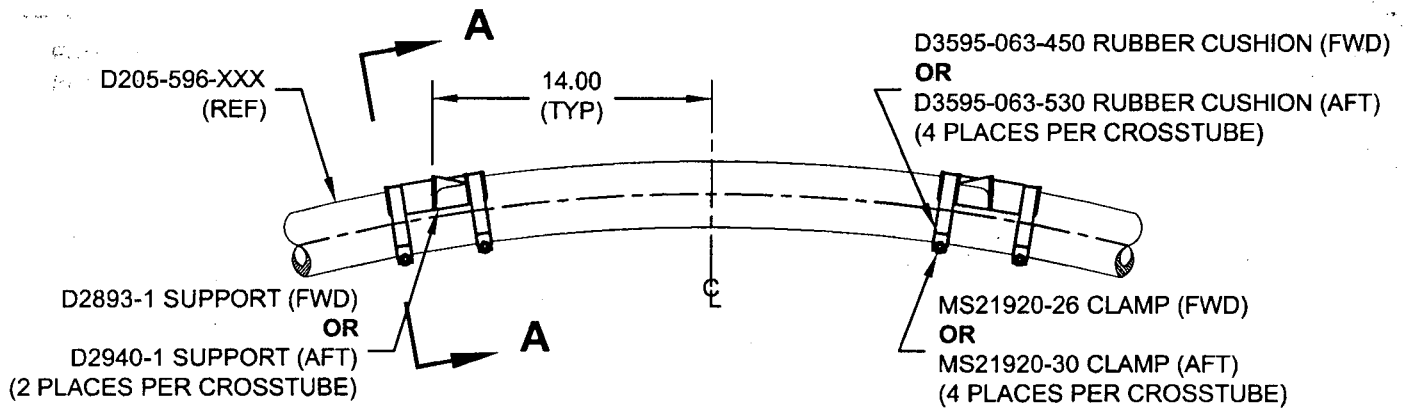
CANADA DEPARTMENT OF TRANSPORT AIRCRAFT CERTIFICATION BRANCH DAO # 01-O-01
APPROVED BY:  D. SHEPHERD (DE # 02)
DATE: 07.11.16 CERT. NO.: SH03-6 ISSUE NO.: 3

A	NEW ISSUE	MB	07.11.16
REV.	DESCRIPTION	BY	DATE
DESIGN		DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN		DRAWING NO. REV. A DSI 9396 SHEET 1 OF 2	
CHECKED		TITLE SCALE CROSSTUBE SUPPORT CHANGE NTS	
MFG. APPR.		DATE 07.11.16	
APPROVED		COPYRIGHT © 2007 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

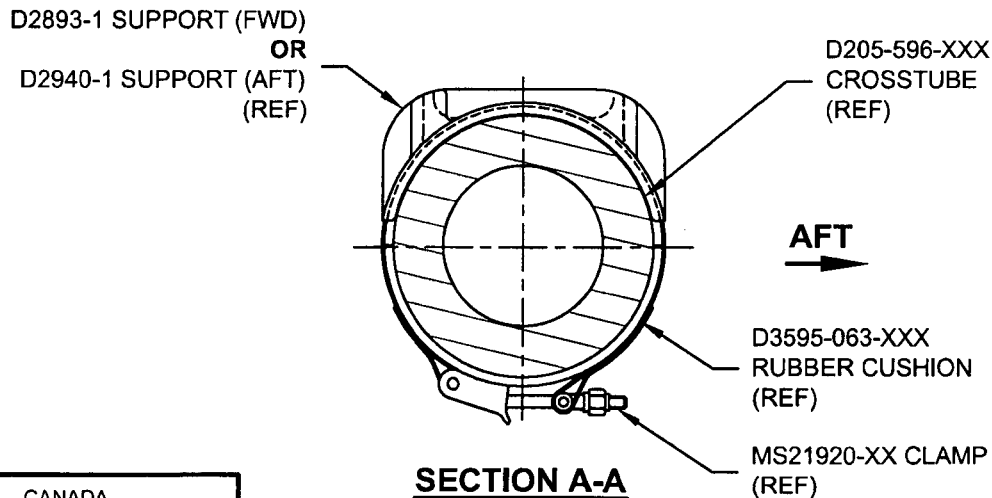
For customers who would like to upgrade their D205-596-101/-103/-105/-107 Crosstubes from CHG 001 to CHG 002, the following kits can be obtained from Dart:

### DSI 9396-XXX PARTS LIST

QTY -011	QTY -013	Part Number	Description
X		DSI 9396-011	FWD CROSSTUBE SUPPORT CHANGE (D205-596-101/-105 FWD CROSSTUBE)
	X	DSI 9396-013	AFT CROSSTUBE SUPPORT CHANGE (D205-596-103/-107 AFT CROSSTUBE)
4		D3595-063-450	RUBBER CUSHION
4		MS21920-26	CLAMP
	4	D3595-063-530	RUBBER CUSHION
	4	MS21920-30	CLAMP



**FIGURE 1: INSTALLATION OF SUPPORT ON CROSSTUBE**



CANADA  
DEPARTMENT OF TRANSPORT  
AIRCRAFT CERTIFICATION  
BRANCH  
DAO # 01-O-01

APPROVED  
BY: *[Signature]*  
D. SHEPHERD (DE # 02)

DATE: 07.11.16  
CERT. NO.: SH03-6  
ISSUE NO.: 3

DESIGN		<b>DART AEROSPACE LTD</b>	
DRAWN		HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>[Signature]</i>	DRAWING NO.	REV. A
MFG. APPR.	<i>[Signature]</i>	DSI 9396	SHEET 2 OF 2
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	CROSSTUBE SUPPORT CHANGE	NTS
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Date: Tuesday, 6/19/2007 2:03:40 PM  
 User: Kim Johnston

## Process Sheet

Customer	: CU-DAR001 Dart Helicopters Services	Drawing Name	: FWD X-TUBE EXTENDED HEIGHT GEAR (-011)
Job Number	: 32941		
Estimate Number	: 10007		
P.O. Number	:	Part Number	: D205596101
This Issue	: 6/19/2007 S.O. No. :	Drawing Number	: D205-596-101 REV A
Prsht Rev.	: NC	Project Number	: N/A
First Issue	: / / Type : LANDING GEAR	Drawing Revision	: A
Previous Run	: 32940	Material	:
Written By	: <u>Kim Johnston</u>	Due Date	: 7/15/2007 Qty: 1 Um: Each
Checked & Approved By	: <u>Kim Johnston</u>		
Comment	: Est Rev 8 Removed Bending 05-10-25 JLM		

## Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	DC	DOCUMENT CONTROL
-----	----	------------------



Comment: DOCUMENT CONTROL

D-1 9396

Photocopy D205-594 bluefile &amp; type labels per PPP D205-596-101 CHG001 002

11.27  
07.06.21 H

2.0	D2889	FWD Crosstube
-----	-------	---------------



Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)

FWD Crosstube

Pick:

Qty Part number Description Batch

1 D2889 Fwd Crosstube

3.0	BENDING	BENDING MACHINE
-----	---------	-----------------



Comment: BENDING MACHINE

Bend as per Dwg D2889

4.0	LANDING GEAR 1	LANDING GEAR RESOURCE 1
-----	----------------	-------------------------



Comment: LANDING GEAR RESOURCE 1

Mark 31.53" for cutting from tangential line in the straight section from D2889 as per Dwg wall template.

\*\*\*Identify off-cuts with batch number &amp; part number and bring them to cnc lathe\*\*\*

REFERENCE ONLY

5.0	QC15	DIMENSIONAL CHECK OF X-TUBES
-----	------	------------------------------



Comment: DIMENSIONAL CHECK OF X-TUBES

Customer : CC-DAR01 Dart Aerospace Ltd.

Drawing Name : D205-596

Job Number : 36810

Estimate Number : 10804

P.O. Number :

Part Number : Z\_CUSTOM

This Issue : 17/01/2008 S.O. No. :

Drawing Number : ECN 1108

Prsht Rev. : NC

Project Number :

First Issue : / / Type : LANDING GEAR

Drawing Revision :

Previous Run : 00015

Material :

\*Written By : \_\_\_\_\_

Due Date : 24/01/2008 Qty: 1 Um: Each

Checked & Approved By :                     

Comment :                     

Additional Product

Job Number:



Seq. #:

Machine Or Operation:

Description :

1.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

REMOVE FROM STOCK

D205-596-101

32941-34946-34947

D205-596-103

35427-35429-36067-36068

D205-596-105

D205-596-107

35224-

ADD NEW PAPERWORK TO KITS

DSI 9396 REV.B, PER ECN 1108

RETURN TO STK

86/15 SP (8x)

2.0

QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

15080121

Job Completion



2008/1/21

U